BIOLOGICAL EVALUATION

for

AQUATIC THREATENED, ENDANGERED, and SENSITIVE (TES) SPECIES

Crescent Ranger District

Deschutes National Forest

CRESCENT CREEK WILD AND SCENIC RIVER PLAN

Prepared and Approved by:

/s/ *Paul Powers* Date: September 8, 2017

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SUMMARY

The following (table 1) displays the threatened, endangered and sensitive (TES) species considered in the analysis of the Crescent Creek Wild and Scenic Plan.

Table 1. Aquatic species and effects for this project.

Species	Scientific Name	Status	Occur-rence	Effects Determination
Aquatic Species				
Columbia River Bull Trout	*Salvelinus confluentus*	T	HN	**NE**
Interior Redband Trout	*Oncorhynchus mykiss* ssp.	S	D	**NI**

Status

E	Federally Endangered
T	Federally Threatened
S	Sensitive species from Regional Forester's list
C	Candidate species under Endangered Species Act
MS	Magnuson-Stevens Act designated Essential Fish Habitat

Occurrence

HD	**Habitat Documented** or suspected within the project area or near enough to be impacted by project activities
HN	**Habitat Not** within the project area or affected by its activities
D	Species **Documented** in general vicinity of project activities
S	Species **Suspected** in general vicinity of project activities
N	Species **Not documented** and not suspected in general vicinity of project activities

Effects Determinations

Threatened and Endangered Species

NE	No Effect
NLAA	May Effect, Not Likely to Adversely Affect
LAA	May Effect, Likely to Adversely Affect
BE	Beneficial Effect

Sensitive Species

NI	No Impact
MIIH	May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species
WIFV	Will Impact Individuals or Habitat with a Consequence that the Action May Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species
BI	Beneficial Impact

Summary of Evaluation/Assessment Results

The following effects determinations were made in this Biological Evaluation for sensitive fish species in Crescent Creek:

- Redband Trout- **No Impact**

Management direction

All federal land management activities in the Crescent Creek Wild and Scenic Plan must follow standards and guidelines listed in the 1990 Deschutes National Forest Land and Resource Management Plan (USDA Forest Service 1990) and the Northwest Forest Plan (2001).

Deschutes National Forest LMRP

The flowing are the various standards and guidelines found in the Deschutes National Forests Land and Resource Management Plan (USDA 1990).

RP-2 LMRP. Maintain or enhance riparian areas and the riparian dependent resources *water quality and quantity, fish, and certain wildlife and vegetation that owe their existence to riparian areas) associated with these areas.

RP-3 LMRP. Give preference to riparian area dependent resources over other resources.

RP-10 LMRP. Manage woody debris and riparian vegetation to: maintain or enhance stream channel and bank structure, and 2) provide structural fish habitat to meet the objectives for resident fish populations provided for in the Forest Plan.

FI-4 LMRP. Habitat improvement work will be pursued based on the contribution of the work to fishery objectives and targets. Improvement work will adopt measures to protect other resources as needed.

Northwest Forest Plan

The Northwest Forest Plan uses the Aquatic Conservation Strategy to maintain and restore the ecological health of watersheds and aquatic ecosystems. The goal of this strategy is to maintain or restore the "natural" disturbance regimes to these sensitive environments. Consistency with the ACS Objectives can be found in Appendix A of this document.

PROPOSED ACTION

The action proposed by the Forest Service is to prepare an environmental assessment for the Crescent Creek Wild and Scenic River Management Plan that would amend the Deschutes National Forest Land and Resource Management Plan. The Wild and Scenic

River Management Plan would incorporate existing Forest Plan standards and guidelines where appropriate and address the adequacy of existing direction. It could also propose new standards and guidelines if needed, to protect and enhance the free-flowing nature, water quality, and the Outstandingly Remarkable Values for which Crescent Creek was designated a Wild and Scenic River. Other values rated as significant may also need consideration or additional protection. The proposed action would also determine the final legal corridor boundary for Crescent Creek that best protects the Outstandingly Remarkable Values.

In general the Management Plan will:

- Describe the existing and desired condition(s) for the river
- Describe the standards and guidelines necessary to guide management actions in the future
- Develop a monitoring plan
- Identify the final boundary

Goal

To protect and enhance the current character of the creek's corridor while rehabilitating degraded resources.

General Theme and Objectives

The Management Plan would consist of existing direction in the Forest Plan as amended, as well as additional standards and guidelines needed to protect Outstandingly Remarkable Values or other river values. Rehabilitation and management of recreational use would be accomplished through future site specific actions or projects. Long term protection of the creek's outstandingly remarkable and significant values would be provided. Monitoring is a prominent part of the Management Plan in Alternative 2 using the Limits of Acceptable Change concept to focus on the desired future condition, rather than on how much use or abuse an area can tolerate.

EXISTING CONDITION

Crescent Creek was historically occupied by redband trout (Oncorhynchus mykiss), bull trout (Salvelinus confluentus), reticulate sculpin (Cottus perplexus) and mountain white fish (Prosopium williamsoni) (ODFW, 1996). The introduction of non-native species such as brook trout (Salvelinus fontinalis) and brown trout (Salmo trutta) along with the alteration of flows and blockage of passage between Crescent Lake and Crescent Creek (Crescent Lake Dam) resulted in a decrease in native species. Redband and whitefish still persist, while bull trout have likely been extirpated. Electro-fishing, snorkeling and environmental DNA (eDNA) surveying have failed to find bull trout in Crescent Creek or its tributaries.

The current flow management results in a reversal of natural flow conditions where peak flows now occur during the summer (irrigation season) and very low base flows occurring during the fall-spring (storage season). As a result, a greatly reduced amount of habitat is available to native fish during the storage season. Spawning, incubation and emergence are likely adversely affected by these conditions.

The construction of the current Crescent Lake dam has blocked fish passage at all life stages between Crescent Creek and Crescent Lake. As a result, adfluvial life histories such as those expressed by native bull trout have been lost. The blockage of passage has likely contributed to the extirpation of bull trout from this system.

The following excerpt from the Crescent Creek Water Quality Restoration Plan (2002) describes the flow and temperature conditions of Crescent Creek:

> "During the summer months the lake (Crescent) surface is exposed to over 200 Joules/square meter at this elevation and latitude, heating the surface water from 43.7 degrees Fahrenheit in the middle of May to 68 degrees Fahrenheit in August. As the lake warms throughout the summer, warmer water and higher volumes are released into Crescent Creek.
>
> Discharge has been altered to peak in August rather than the spring as with Big Marsh and Odell Creeks, two similarly located in elevation and relation to the Cascade Crest. Cold Creek and Big Marsh Creek are the two perennial streams contributing to the discharge of Crescent Creek by a total of 230 cfs as if flows the remaining 22 miles before entering the Little Deschutes River. These two cold water tributaries help to offset the warmer lake water by discharging cold water into the system. However, due to the large summer volume released from Crescent Lake, these tributaries have less influence on tempering the downstream water temperatures as they would have under a lower, more natural summer flow regime."
>
> "With this high sun angle at this latitude, along with a well-functioning riparian zone and stream channel, tree heights would have to exceed their site potential to contribute to increased stream channel shade or would have to encroach into a healthy, well-functioning riparian zone to increase shade cover (page 19)."

This means that under natural flow conditions (unaltered by the Crescent Lake Dam operations), Crescent Creek would have elevated flow levels during the winter and spring months, then decline through the summer and fall. With declining summer/fall flows originating from Crescent Lake (warm water heated in the sun) the influence of cold springs/tributaries would be more prominent. However, under the current conditions the high volume of warm water being discharged from Crescent Lake during the summer and fall months overwhelms the influence of these cold water sources and dilutes them resulting in elevated temperatures in Crescent Creek.

The current regulation of flows and past land/resource management actions have resulted in simplified channel complexity, thermal complexity and habitat complexity. The historic (pre-European) conditions within Crescent Creek were likely much more complex with a significant amount of logjam complexes, beaver dams complexes and wetland complexes. These features and their associated processes and habitats are lacking.

The current flow conditions and non-native fish species assemblage in Crescent Creek are likely to continue to inhibit the recovery of native species into the foreseeable future.

EFFECTS TO REDBAND TROUT

Effects

The proposed action would have no effect on the fish populations of Columbia River Bull Trout, or Interior Redband Trout.

Of the species listed above, only redband trout are found within Crescent Creek and its tributaries. Implementation of the proposed Wild and Scenic River plan would not result in any direct actions that change aquatic habitats within the planning area. The WSR plan would rather formalize protections for the river corridor along Crescent Creek and inhibit future degradations to the Outstanding Remarkable Values identified.

Mitigation

The proposed standards and guidelines, combined with the existing in management plans, will be adequate minimization measures and will be adhered to in order to protect the viability of the Crescent Creek redband trout population.

Determination

No Impact. The project will meet DNF LRMP and NWFP Standards and Guidelines.

EFFECTS TO BULL TROUT

Direct and Indirect Effects

The proposed action would have no effect on fish populations of Columbia River Bull Trout. Bull trout have been extirpated from this sub watershed for many decades, therefore, proposed Wild and Scenic River management will have no effect on these fish.

Determination

No Effect. The project will meet DNF LMRP and NWFP Standards and Guidelines.

References

Fies, T., M. Manion, B. Lewis, and S. Marx. 1996. Upper Deschutes River Sub-basin Fish Management Plan. Oregon Department of Fish and Wildlife. Upper Deschutes Fish District. Bend, OR.

USDA.Forest Service. 1990. Deschutes National Forest land and resource management plan. Deschutes National Forest. Bend, OR.

U.S. Forest Service and Bureau of Land Management (USFS and BLM). 1994. Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl.

USDA. Forest Service and USDI Bureau of Land Management. 2001. Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines Within the Range of the Northern Spotted Owl. Portland, Oregon

APPENDIX A- Consistency with ACS Objectives

Based on the evaluation of the short-term, long-term, and cumulative impacts, the Crescent Creek Wild and Scenic River Plan is consistent with ASC objectives. Each Aquatic Conservation Strategy Objective is discussed below (U.S. Forest Service and BLM 1994):

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species populations and communities are uniquely adapted.

   The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. Proposed new standards and guidelines in the Plan would help maintain and protect the distribution, diversity, and complexity of watershed and landscape-scale features.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

   The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. Proposed new standards and guidelines in the Plan would provide additional protections and maintain the spatial and temporal connectivity within watersheds.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

   The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. Proposed new standards and guidelines in the Plan would provide additional protections and maintain the physical integrity of the aquatic system.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the streams and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

   The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. Proposed new standards and

guidelines in the Plan would help maintain water quality through the application of additional protection measures.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

   The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. Proposed new standards and guidelines in the Plan would help maintain the sediment regime.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing and magnitude, duration and spatial distribution of peak, high and low flows must be protected.

   The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. The Plan would maintain in-stream flows because existing and proposed new standards and guidelines would protect existing in-stream flows. Crescent Creek is part of the Upper Deschutes River irrigation management area. Management of flows out of Crescent Lake and into Crescent Creek could be modified in the future to improve aquatic function in Crescent Creek and provide improved flow conditions.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

   The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. The Plan would maintain the groundwater elevation because existing and proposed new standards and guidelines would protect existing in-stream flows and channel processes.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

   The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. Proposed new standards and guidelines in the Plan would help maintain the species composition and structural diversity of plant communities.

9. Maintain and restore habitat to support well-distributed population of native plant, invertebrate, and vertebrate riparian –dependent species.

The Crescent Creek Wild and Scenic River Plan is a programmatic decision and is not associated with ground disturbing activities. Proposed new standards and guidelines in the Plan would help maintain habitat for plants and riparian dependent species by reducing riparian plant mortality, landscape erosion, and streambank erosion.